US Geological Survey (USGS)
Community for Data Integration (CDI)
Request for Proposals (RFP)

For Fiscal Year 2014

Issue Date: September 11, 2013

Table of Contents

Description

This document describes the CDI Request for Proposals process for Fiscal Year 2014 (FY14).

Statement of Interest Submission

This document invites Statements of Interest (SOI) for FY14 CDI projects that meet the requirements outlined below to be submitted to the online proposal management system at *https://my.usgs.gov/CDI_RFP* by **5 pm Mountain Time on Wednesday October 30, 2013** as a PDF file.

Eligibility

Any USGS Mission Area, Program, Center, Office or duty station and their partner(s) are encouraged to apply. All proposals must specify a **USGS employee** as a lead principal investigator (PI) to submit a proposal under this RFP. USGS personnel may be involved in more than one prospective or existing CDI project, but can only be listed as the lead principal investigator on only one proposal.

Project Duration

All project work must be completed by September 30, 2014. Because CDI projects are funded with one year money that is usually released from the budgetary process in March, project teams should plan projects or project phases that can be reasonably completed in a 3-6 month time frame.

Estimated Available Funds

Funding for CDI projects varies from year to year and is directly influenced by the overall USGS budget. CDI projects have been funded since fiscal year (FY) 2009 at around $500,000 (or less) total each year and it is anticipated that FY14 will fall within that range. Efforts will be made to ensure a distribution of funding to proposals across the CDI Science Support Framework (SSF) categories (see *Proposal Submission Categories*).

Award Amount

Applicants can request funding up to $50,000. All proposal budgets will be carefully analyzed for efficient allocation of funds to federal and contracting salary, travel, product development and delivery, and any other specified expense categories based on current administrative policies in effect. Funding is awarded on an annual basis.

Funding Process

Funds will be transferred to a USGS cost center through a change of allocation. The USGS cost center may then provide sub-awards to other collaborating organizations. The lead PI(s) must work with their Administrative Officer (AO) to ensure an accurate budget and funding management responsibilities before submission.

Proposal authors who intend to make use of USGS contracting staff in their CDI project implementation team must include a clear statement in their proposal indicating that they have checked with and received confirmation from the Contracting Officer's Representative (COR) that the contracting staff can participate.

Estimated Schedule for Submission, Review, Awards

*Due to the October 2013 government shutdown, the deadlines have been revised

Submission deadline for Statement of Interest (SOI)……October 30, 2013
SOI Reviews with CDI Community and Working Groups……..November 15, 2013
Applicants Notified and Full Proposals Requested……..November 22, 2013
Invited Full Proposals Due……...January 14, 2014
Final Projects Reviewed and Identified……..February 7, 2014
Funded Projects Announced……March 12, 2014

Application Process

1. Submit Statement of Interest – For FY14, CDI is requesting all interested parties to submit a Statement of Interest (SOI) for initial evaluation. An SOI template for guidance can be found in *Appendix A – Statement of Interest Format*. Although a proposal may generate products relevant to more than one CDI SSF category (See *Overview of the CDI Science Support Framework*), applicants are required to choose the single most applicable SSF category under which to submit their proposal. SOIs must be submitted via the online proposal management system at *https://my.usgs.gov/CDI_RFP*. Failure to follow these guidelines may result in an SOI being removed from consideration. Applicants will receive a confirmation email after the SOI has been submitted.

2. Evaluate Statements of Interest – All SOIs will be reviewed by the CDI Community and the Executive Sponsor. Project work must be completed by September 30, 2014.

In addition to the specific Category requirements (See *Proposal Submission Categories*), SOIs will be considered according to the following general criteria:

- delivering an immediate benefit to solve an existing data integration challenge;
- creating an infrastructure that can be scaled or leveraged across disciplines;
- leveraging an existing or demonstrating a new methodology and/or solutions architecture that can be repeated/replicated for other data or research projects;
- creating an environment that allows future innovative applications to access USGS data;
- contributing to interdisciplinary scientific decision making;
- providing a benefit to scientists;
- promoting standards and best practices for data management;
- engaging of stakeholders, decision makers and other entities; and
- relevance to, benefit to, or complementary to other SSF categories, elements, or CDI projects.

SOIs should also clearly explain the value of any important or unique datasets or data assets involved, the context of the project, and any products that might be generated.

Datasets Used/Impacted/Exposed

Projects resulting in or based upon innovative integration, use, or exposure of USGS and other datasets of particular uniqueness and/or scientific value will be considered favorably. If specific datasets will be used, directly impacted, improved upon, or exposed for discovery, analysis, visualization or other applications as part of the proposed project, provide a list of these datasets by their title if they have one (or create a brief but

descriptive title if necessary) and include the temporal extent, geographic extent, and number of records for each dataset as applicable/available. Describe the value of these datasets or their subsequent use in the proposed project including impacts on data management processes, overcoming data management challenges, exposing novel dataset characteristics or applications etc.

Context - Geographic/Geologic/Ecosystem/Habitat/Taxonomic/Other
Projects involving or benefiting research or data integration in regard to a particularly valued geographic or geological region, ecosystem, habitat or other recognized unit or research interest, should describe this context by listing up to three important contexts that may benefit from the results or funding of this project e.g. overcoming a challenge associated with integrating climatic, habitat, socio-economic, and species occurrence and abundance data, and visualizing the distribution and resiliency of endangered grassland species populations on public lands from various data sources.

Context may also be accompanied by inclusion of or references to relevant lists such as species or taxonomic groups, geologic formations or phenomenon, geographic phenomenon, hydrological units, etc. Explain why this context is important or valuable, helps answer a scientific challenge, or provides a good use case for solving a specific challenge associated with data integration.

Expected Product(s) to be Generated
Include a basic listing of the types of products that will be generated as a result of the project, including both ancillary and final deliverables e.g. mobile application, fact sheet, GIS shape file, GIS data layer, desktop data entry application, online data entry application, online data cleaning application, USGS series report or journal article, USGS Blog article or press release, etc.

3. Invitation to Submit Full Proposal – Selected applicants will be invited to develop and submit a full proposal. The full proposal format is available in *Appendix B – Format for Invited Full Proposals.*

The CDI Coordinator may contact applicants for clarification of elements of a proposal on behalf of the Community and Working Groups. However, an invitation to submit a full proposal or contact from the CDI Coordinator does not necessarily guarantee award of funding.

4. Full Proposal Review Criteria – In addition to the specific Category requirements (See *Proposal Submission Categories*), full proposals will be evaluated according to the following weighted factors: scope, project team experience, commitment to effort, budget and timeline.

- **Scope (25%)**
  Describe the project, its steps, goals, milestones, partners/participants, products, and outcomes. To demonstrate how well the proposal authors understand the premises of the CDI, describe how the project contributes to the CDI, its purpose and goals, and contributes to the CDI Science Support Framework. Explain the impacts of the project on the research needs and goals of the USGS, e.g. through better data integration, application of more effective or efficient techniques, etc. Explain how the project will support, improve, or otherwise contribute to USGS science.

CDI projects must be completed by September 30, 2014. With respect to scheduling, cost control, and other related project management concerns, the applicant(s) must identify any anticipated implementation challenges and describe how the project will address or overcome them. Include an analysis of the scope of work against the requested funding.

The proposal evaluation will be based on the relevance, significance, comprehensiveness, and feasibility of the project scope.

- **Technical Approach (25%)**
  Outline the steps, methodologies, technologies, and resources to be utilized in implementing the project. This includes facilities, technologies and associated platforms and hardware/software requirements, and other equipment and supplies supporting the project and/or its outputs or products. Indicate the project implementation approach using these materials and methodologies. Proposals will be evaluated on the degree to which applicants comprehend the tasks and procedures necessary to accomplish project objectives. Proposals demonstrating innovative, special, or highly innovative techniques for accomplishing the project objectives will be viewed favorably.

- **Project Experience (25%)**
  Describe experience that would lead to a successful proposal. Identify specific individual(s) roles, qualifications and skills represented in the project team. Evaluation will be based on how completely and fully the narrative addresses experience, and special qualifications and skills possessed for successful completion of the proposed project by the end of the performance period.

  Curriculum vitae (2 pages max.) of each or specific project team members may be included as appendices.

- **Commitment to Effort (15%)**
  Describe the extent to which project results, products, and the data/metadata created will continue or be sustained after the performance period, e.g. metadata creation resource established, Web presence, or other sustainable measures.

  Evaluation will be based upon the extent that the applicant will continue to support implementation of the project or products beyond the award period. Memoranda of Understanding (MoU) and/or letters of support/commitment (max. 1 page each) may be included as appendices and will be considered in the evaluation.

  Projects may include learning about and further exploring new technologies and ideas as deliverables and any resulting products may include experimental prototypes or other products not intended for continued support. In this case, describe why the project deliverables will not require or were not intended for long term sustainability; and how they will contribute to or result in beneficial outcomes or other items of value within the context of this Request for Proposals.

- **Budget (5%)**
  Please provide a detailed budget for the project. Include at least the following categories of information, separating the CDI funds from the in-kind match:
    1. Personnel (Salaries and Benefits)

2. Travel Expenses
3. Other Direct Cost Line Items
4. Total Direct Charges
5. Indirect Charges (Overhead)

5. Proposal Review Process – Full proposals will be reviewed by a Review Panel. Proposals will be scored by individual reviewers and ranked by the entire Panel. Recommendations by the Review Panel will be presented to the Executive Sponsor for final evaluation. For more information see *Appendix D – Full Proposal Review Process*. Note the Executive Sponsor has the flexibility to select proposals deemed an emerging priority for the Bureau and a percentage of CDI Funds may be awarded to proposals that address those topics.

Additional Considerations

In-Kind Contributions

All proposals must include a 30-50% in-kind match of the amount of CDI funding being requested. In the past, successful proposals included substantial in-kind resources as an augmentation to extend the scope of a given project. The USGS Core Science Systems Mission Area will contribute in-kind funding for federal staff salary to support CDI projects.

Collaboration

The CDI encourages leveraging and collaboration, so personnel from USGS as well as other institutions can be identified as secondary principal investigators or collaborators on the project. Partnerships among organizations are seen as primary building blocks for the CDI and proposals involving collaborations that have a broad impact will be evaluated more favorably. Participation in a CDI Working Group (*http://my.usgs.gov/confluence/display/cdi/Home*) is highly encouraged, but not required.

Sustainability and Letters of Support

Proposals must include a plan or well-developed ideas for how the project or its products might achieve long-term sustainability where appropriate. Supporting documents may include letters of support from collaborators and/or clients (max. 1 page each) that may benefit from and/or will use the products and services resulting from the completion of the CDI project.

Travel Support

Proposal budgets should include estimated travel funds for in-person participation by at least one project representative in at least one CDI annual event or meeting. Subject to USGS conference guidance and regulations, CDI annual meetings have so far been held in Denver, CO. Other CDI events may also be held at USGS Headquarters in Reston, VA.

Annual Report

All CDI projects will be required to contribute to the CDI Annual Report, which will be delivered in early 2014. Annual reports do not need to be lengthy, but must include the following information at a minimum:

1. Administrative: Please include the name and contact information for the lead principal investigator and the project title.
2. Purpose and Objectives: Provide an overview of the project and describe the project goals and objectives and note any changes from the original proposal objectives.
3. Benefits: List the benefits of the project and impacts on CDI goals. Contributors are also

encouraged to include any quotes or anecdotes from partners or clients; or real world use cases that demonstrate the value of the project and its products to CDI, USGS, and science.

4. Deliverables: List the in progress or completed deliverables of the project and include any links to products or publications.

Product Delivery

All products resulting from CDI projects must be freely shared, without charge or restriction, with or made available to the CDI, the broader USGS community, and beyond as appropriate. Publicly available tools and services resulting from CDI projects will be viewed favorably. Products and publications resulting from CDI projects may be published or posted on public Web sites and online collaboration and data asset sharing sites hosted by USGS (e.g. ScienceBase) and other organizations, subject to USGS product and publication release guidelines and requirements as well as in the CDI online community (*http://my.usgs.gov/confluence/display/cdi/Home*). As part of the full proposal process, applicants will be required to submit a Product Delivery Form (see *Appendix B – Format for Invited Full Proposals).*

Digital/Electronic Products - CDI projects are encouraged to develop and deliver all software applications and digital technology products that are as inclusive and as freely available as possible. Software applications, digital technology products, snippets of code etc. should be non-proprietary and where appropriate, registered with Department of Interior (DOI) approved or USGS (e.g. GitHub) or broadly (nationally, internationally) recognized professional consortia, registries, or repositories. Proposals should indicate plans and procedures for achieving this.

Data/Metadata - All data assets and information products generated as part of the CDI project must be documented using recognized metadata standards as appropriate (e.g. International Standards Organization (ISO), Content Standard for Digital Geospatial Metadata (CSDGM), etc.) and published in a DOI-approved or broadly recognized metadata clearinghouses such as the USGS sponsored CSAS Metadata Clearinghouse or Data.gov. Proposals must indicate which products will be accompanied by metadata records and where those metadata records will be published. Proposals should also indicate any data assets that will be used in the course of the project that have existing metadata records and either provide a direct reference (e.g. persistent URL or digital object identifier) or explanation for where they may be found and accessed. Applicants may also reference the USGS Data Management website for applicable policies and best practices (*http://www.usgs.gov/datamanagement/*).

Publications – CDI projects are strongly encouraged to include completion of at least one official USGS publication such as a fact sheet or open file report as part of their project deliverables. Proposals indicating plans for employing official USGS publication and media outlets such as the USGS blogs, Weekly Issues Reports, press releases, podcasts and other approved social media channels for promoting their project and its deliverables throughout the fiscal year will be viewed favorably. All official USGS publication products resulting from CDI-funded projects must be submitted to the USGS IPDS and produced in accordance with USGS publishing and review guidelines. Unofficial documents (e.g. informal, unpublished user guides, data dictionaries, application code, etc.) resulting from CDI projects should be shared with or made available to the CDI, the broader USGS community, and beyond as appropriate.

Overview of the CDI Science Support Framework

The Community for Data Integration (CDI) represents a dynamic community of practice focused on advancing scientific data and information management and integration capabilities within the USGS. Since 2009, CDI has funded a variety of projects that support the overarching goal of data integration (*https://my.usgs.gov/confluence/display/cdi/Proposals*) that

- Focus on short-term benefits to science
- Leverage existing capabilities
- Apply solution/methodology that can be replicated
- Ensure sustainability
- Seek substantial return on investment
- Expose corporate data
- Preserve and access project data
- Provide innovative solutions to data science problems

In 2012, the CDI Coordinators (*Appendix F – CDI Coordinators*) developed a Science Support Framework (SSF) (Figure 1, *Appendix E – CDI Science Support Framework (SSF))* that categorizes and relates the activities and processes through which research data flows and within and upon which the CDI operates. It is these categories that provide the focus and a framework for coordination and integration of current and future CDI-funded projects. A more detailed explanation of the CDI SSF categories and the direction of data flow through the framework are included in *Appendix E – CDI Science Support Framework (SSF)* and at *https://my.usgs.gov/confluence/display/cdi/CDI+Science+Support+Framework*.

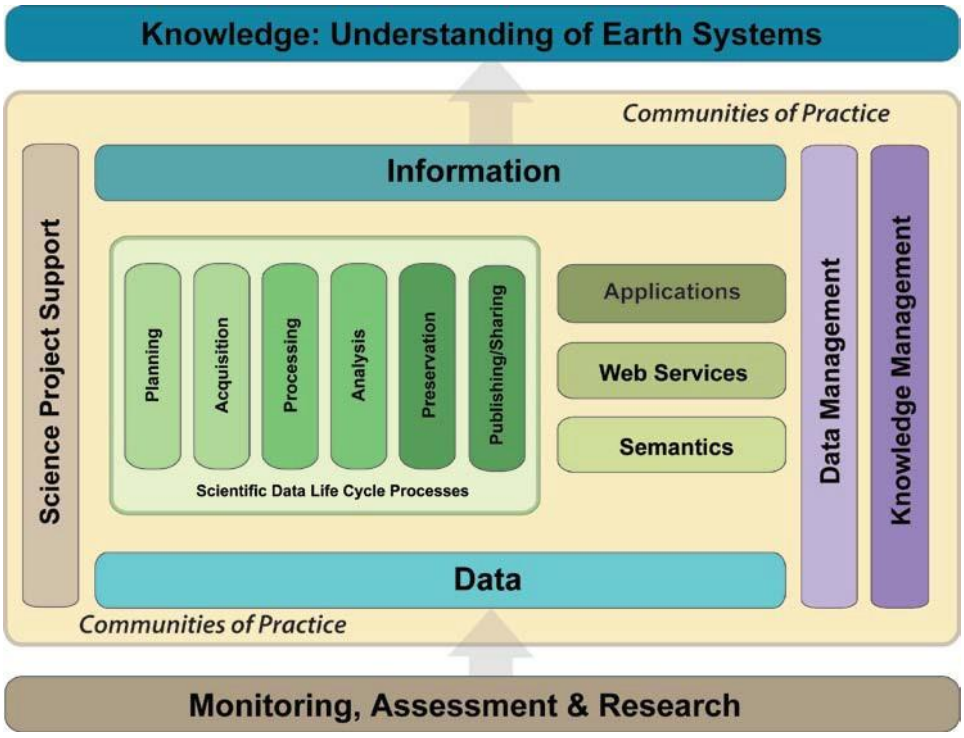


Figure 1: CDI Science Support Framework (SSF)

Data assets flow vertically through the SSF from a base of monitoring, assessment, & research through the Science Data Life Cycle Model (SDLM) processes, with the aid of applications, web services, and semantics. These information products are the primary means by which the USGS contributes to knowledge and understanding of the Earth's physical and biological systems. These flows are managed within the context of the individual science projects that they support.

The horizontal elements in the SSF represent the "what" of the CDI: products and tools, the things that mediate and contribute to the discovery and effective use of scientific data in systematic research.

The vertical elements in the SSF represent the "how" of the CDI: the processes, the implementation of standards and best practices, and the interactions among people, data, and technology necessary to achieve data integration.

Proposal Submission Categories

In FY14, CDI projects will develop and implement data integration products and processes in the context of four main SSF categories: Management, Policy & Standards; Computational Tools and Services; Data & Information Assets; and Community Innovations. Proposals may address multiple aspects of the SSF, but they must be submitted in the context of at least one of the four main SSF categories.

SSF Category 1: Management, Policy and Standards

Data Management includes data and metadata standards and policies and occurs in all phases of the SDLM from planning and data acquisition through scientific research to finished information products. Knowledge Management involves the creation, standardized documentation, and organization of artifacts describing or encapsulating knowledge using tools such as Simple Knowledge Organization Systems (SKOS) Vocabularies and information modeling, resulting in the creation of reusable knowledge bases.

Proposals submitted under the Management, Policy and Standards category (SSF1) should have a primary objective to advance data and knowledge management, policies, standards, and best practices. They may involve the development, application and/or testing of data integration processes, protocols, and products that are or result in improved or more effective data integration management, policies, and standards.

Examples of processes and products include data stewardship best practices; development, implementation or application of the SDLM (specific elements or as a whole); knowledge management tools or processes; or development, implementation and/or testing of data integration standards, governance, and policy.

SSF Category 2: Computational Tools and Services

Computational Tools and Services include SDLM processes, tools, and services that move data through the SDLM, related human and machine interactions, and interactions with data through technology.

Detailed descriptions of each of the SDLM processes illustrated as vertical elements in the CDI SSF (Figure 1) are as follows:

- *Planning* – A documented sequence of intended actions to identify and secure resources and gather, maintain, secure, and utilize data assets;

- *Acquisition* – The series of actions for collecting or adding to data assets;
- *Processing* – A series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use;
- *Analysis* – A series of actions and methods performed on data that help describe facts, detect patterns, develop explanations, and test hypotheses;
- *Preservation* – Actions and procedures to keep data for some period of time; to set data aside for future use; and
- *Publishing/Sharing* – Actions to prepare and issue, or to disseminate data or information products.

Horizontal elements in the SSF (Figure 1) representing the 'what' of the CDI are also encompassed under SSF Category 2 and include:

- *Applications* – that include human readable data services and user interfaces to data driven applications.
- *Semantics* – that categorizes or describes data so that they can be reliably discovered and unambiguously interpreted by humans and machines such as Machine Readable Metadata, Semantic Mediation for Data Integration & Discovery, ontologies and vocabularies, and World Wide Web Consortium Standards.
- *Web Services* – that include machine to machine data exchange, SOAP, REST, SPARQL EndPoints, and other protocols and services.

Proposals submitted under the Computational Tools and Services category (SSF2) should be primarily technical in scope. This may include development of applications, Web services, semantics, or combinations of technologies centered upon the advancement of data discovery and integration.

Examples of technological solutions, tools and services include software applications, Web services, data discovery tools, models, semantic services and tools, cyber-infrastructures, data brokers, and visualization tools.

SSF Category 3: Data and Information Assets

The horizontal elements of Data and Information (assets) in the CDI SSF represent what SDLM Processes, Data Management, and Knowledge Management processes operate on. USGS data and information assets may include:

- *Data* (e.g., raw data, databases, metadata, and linked open data, i.e. RDF)
- *Information* or derived/interpreted information products in the broad sense (e.g., published or shared maps, reports, datasets); and
- *Knowledge* of all types and in all forms – recorded, organized, and preserved in the form of various artifacts. Knowledge can then be improved; shared across groups, organizations, and domains; and reused to support individual and group learning and research.

Proposals submitted under the Data and Information Assets category (SSF3) should be aimed at creating or improving data and information products. They may involve or result in the development, application and/or testing of data and information assets that support, facilitate or improve data integration and the transition from data to information to

knowledge.

Examples of data and information assets include persistent archives, data registries, catalogs, datasets, metadata, derived information products, knowledge bases, vocabularies and/or ontologies.

SSF Category 4: Community Innovation

Sometimes effective and efficient data management and integration requires novel, innovative approaches and application of new or existing tools and services, in ways outside of their originally intended purposes.

Proposals submitted under the Community Innovation category (SSF4) should show true potential for advancing the CDI and its data integration efforts. They may involve or result in the development, application and/or testing of unique data and information assets, tools or services that are not comfortably accommodated under or defined by SSF categories one through three and demonstrate novel, innovative approaches and solutions for data integration; or the development of new unique tools and services for data management and integration. Both prototype and immediately deployable solutions will be considered.

Appendix A – Statement of Interest Format

The Statement of Interest (SOI) should be **two pages maximum** with a standard font at 10 point or larger with one-inch margins. SOIs must be submitted to the online proposal management system (*https://my.usgs.gov/CDI_RFP*) in Portable Document Format (**PDF**). In addition to submitting the PDF document, please also complete any questions that appear within the online proposal management system.

SECTION 1. PROJECT ADMINISTRATIVE INFORMATION (½ page)

- CDI Science Support Category to which the proposal is responding:
  - CDI SSF Category 1: Management, Policy, and Standards (SSF1)
  - CDI SSF Category 2: Computational Tools and Services (SSF2)
  - CDI SSF Category 3: Data and Information Assets (SSF3), or
  - CDI SSF Category 4: Community Innovation (SSF4)
- Project title
- Name of lead USGS cost center requesting funding
- Name of USGS principal investigator, mailing address, telephone, fax, and email
- Names and contact information for additional principal investigators or collaborators
- Short description (generally one or two sentences)

SECTION 2. PROJECT SUMMARY (1 page)

Please provide a brief narrative summary of the project based on the evaluation criteria noted within the Statement of Interest and SSF category review criteria sections of this document. Additionally, include information about the specific datasets used/impacted/exposed as part of the project; the context of the project such as the geographic/geologic/ecosystem/habitat/taxonomic/other; and the type of product(s) that will be generated (e.g., mobile application, fact sheet, GIS shape file, GIS data layer, desktop data entry application, online data entry application, online data cleaning application, USGS Blog article or press release etc.)

SECTION 3. ESTIMATED BUDGET (1/2 page)

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. SALARIES (including Benefits):		
Personnel Total:	$	$
Contract Personnel Total:	$	$
Total Salaries:	$0	$0
2. TRAVEL EXPENSES:		
Travel Total (Per Diem, Airfare, Mileage/Shuttle) **x** # of Trips:	$	$
Other travel expense (Registration fees):	$	$
Total Travel Expenses:	$0	$0
3. OTHER DIRECT COSTS: (itemize)		
Equipment (inc. software, hardware):	$	$
Publication Costs:	$	$
Office supplies, Training, Other expenses:	$	$
Total Other Direct Costs:	$0	$0
Total Direct Costs:	$0	$0
Indirect Costs (%):	$0	$0
GRAND TOTAL:	$0	$0

Appendix B – Format for Invited Full Proposals

Proposals must be submitted through the online proposal management system at *https://my.usgs.gov/CDI_RFP*. In addition to submitting the documents listed below, please complete any questions that appear within the online proposal management system.

Proposal Structure: Applicants must submit three separate documents.

1) A **single PDF document** (not to exceed 10Mb) with:
   - Cover Sheet Page (max. 1 page) (See *Appendix C – Example Cover Sheet*)
   - General Public Summary (not to exceed 200 words; submitted on a separate page within the proposal and uploaded to the online proposal management system)
   - Proposal Body
   - Budget Justification
   - Appendices (e.g. curriculum vitae – max. 2 pages each, letters of support – max. 1 page each, etc.)
2) A **Budget form** using the Excel template: *https://my.usgs.gov/confluence/display/cdi/CDI+FY14+RFP+Forms*
3) A **Product Delivery form (PDF format)**: *https://my.usgs.gov/confluence/display/cdi/CDI+FY14+RFP+Forms*

Proposals should be formatted to standard letter size (8.5" W by 11" L), All proposals should be no more than 7 pages, single-spaced, using mainly Times New Roman 11 point font), not including the cover sheet, the general public summary, and appendices. Narrative (body) text must be rendered in Times New Roman 11 point font, excluding headings which must be formatted bold and 12 point. All pages following the Cover sheet (including appendices) must be numbered.

In addition to the PDF document components, some information will be collected within the online proposal management system. Please follow instructions within the system and below in this document.

All graphics, photos, illustrations, tables, graphs, and charts must be embedded directly in the proposal document and be specifically referenced at least once in the narrative (body) of the proposal. All graphics must be accompanied by a caption that describes or explains the graphic. These count towards the total number of pages allotted.

1) Proposal Narrative Guidance

A. Cover Sheet Page Instructions (max. 1 page)

The cover sheet will aid reviewers and the review process by allowing them to easily distinguish between proposals and see each proposal's basic elements at a glance. An example cover sheet is provided in *Appendix C – Example Cover Sheet*.

CDI SSF Category: Indicate the primary CDI SSF category under which the proposal is being submitted. Reference the CDI SSF category by its full label:
- CDI SSF Category 1: Management, Policy, and Standards (SSF1)
- CDI SSF Category 2: Computational Tools and Services (SSF2)
- CDI SSF Category 3: Data and Information Assets (SSF3), or
- CDI SSF Category 4: Community Innovation (SSF4)

Project Title: Include a descriptive title of proposed project.

Principal Investigator(s): List the lead USGS principal investigator with affiliation, mailing address, phone, fax, and email as well as the same contact information for any co-principal investigators.

Fiscal Contact: Provide the lead USGS fiscal contact with affiliation, mailing address, phone, fax, and email.

Collaborators: Provide the names, organizational affiliation, mailing address, telephone number and email address for all project personnel involved (other than the principal investigator).

Abstract: Provide a 200-250 word abstract that briefly summarizes the project's value or importance in the context of research science and data management/integration and its relevance to the CDI SSF. Include statements regarding assumptions or hypotheses that will be tested or data management/integration challenges that will be addressed. Describe any results, outcomes or products that will be generated by the project and their value or application to research science or data management/integration. Key sections from the full that must be summarized are 1) Scope; 2) Technical Approach; 3) Project Experience; 4) Commitment to Effort; and 5) Expected Products/Outcomes.

Total funding amount requested: Provide total project funding requested from CDI.
Total In-Kind Funding: Provide total in-kind funding from other sources.

Specific Datasets Used/Impacted/Exposed
If specific datasets will be used, directly impacted, improved upon, or exposed for discovery, analysis, visualization or other applications as part of the proposed project, provide a list of these datasets by their title (if necessary, create a brief but descriptive title) and include the temporal extent, geographic extent, and number of records for each dataset as applicable/available (see *Appendix C – Example Cover Sheet* for examples).

Context - Geographic/Geologic/Ecosystem/Habitat/Taxonomic/Other
If the proposed project targets or will benefit research or data integration in regard to a specific geographic or geological region, ecosystem, habitat type or other recognized unit, describe this context by including a list of up to 3 (see *Appendix C – Example Cover Sheet* for examples).

Expected Product(s) Generated
Include a basic listing of the types of products that will be generated as a result of the project, including both ancillary and final deliverables e.g. mobile application, fact sheet, GIS shape file, GIS data layer, desktop data entry application, online data entry application, online data cleaning application, USGS Blog article or press release etc.

B. General Public Summary (max. 1 page)

Provide a synopsis of the overall project that is written for a general public audience, does not exceed 200 words, and is suitable for sharing on public websites and other outreach methods. Key points to include: Why is the project important? Why should the public care? How will the results of the project improve aspects of the goals of CDI and how do they resonate with stakeholders?

The general public summary should be submitted on a separate page within the proposal PDF document.

C. Proposal Narrative (max. 7 pages)

Scope
Describe the project, its steps, goals, milestones, partners/participants, products, and outcomes. To demonstrate how well the proposal authors understand the premises of the CDI, describe how the project contributes to the CDI, its purpose and goals, and contributes to the CDI Science Support Framework. Explain the impacts of the

project on the research needs and goals of the USGS e.g. through better data integration, application of more effective or efficient techniques, etc. Explain how the project will support, improve, or otherwise contribute to USGS science.

CDI projects must be completed by September 30, 2014. With respect to scheduling, cost control, and other related project management concerns, the applicant(s) must identify any anticipated implementation challenges and describe how the project will address or overcome them. Include an analysis of the scope of work against the requested funding.

The proposal evaluation will be based on the comprehensiveness and feasibility of the project scope.

Technical Approach
Outline the steps, methodologies, technologies, and resources to be utilized in implementing the project. This includes facilities, technologies and associated platforms and hardware/software requirements, and other equipment and supplies supporting the project and/or its outputs or products. Indicate the project implementation approach using these materials and methodologies.

Proposals will be evaluated on the degree to which applicants comprehend the tasks and procedures necessary to accomplish project objectives. Proposals demonstrating innovative, special or highly unique techniques that can be broadly used for accomplishing the project objectives will be viewed favorably.

Project Experience
Describe experience that would lead to a successful proposal. Identify specific individual(s) roles, qualifications and skills represented in the project team and how they are contributing to the success of the proposed project.

Evaluation will be based on how completely and fully the narrative addresses experience, and special qualifications and skills possessed for successful completion of the proposed project by the end of the performance period.

Curriculum vitae (max. 2 pages each) of each or specific project team members may be included as appendices. Ensure the identified personnel are clearly listed in the budget section.

Commitment to Effort
Describe the extent to which project results, products, and the data/metadata created will continue or be sustained after the performance period, e.g. metadata creation resource established, Web presence, or other sustainable measures.

Evaluation will be based upon the extent that the applicant will continue to support implementation of the project or products beyond the award period. Memoranda of Understanding (MoU) and/or letters of support/commitment may be included as appendices and will be considered in the evaluation.

Projects may include learning about and further exploring new technologies and ideas as deliverables and any resulting products may be experimental prototypes or other products not intended for continued support. In this case, describe why the project deliverables will not require or were not intended for long term sustainability; and how they will contribute to or result in beneficial outcomes or other items of value within the context of this Request for Proposals.

Budget Justification
A budget justification must be included to explain project costs in the items outlined in the budget. Detail should be sufficient to allow evaluation by reviewers of the costs proposed. Explain requests in each category:

Salaries and fringe benefits: Include estimated commitment to the project (by hours) and rate of compensation proposed for each named individual (e.g., the PI) or category (e.g., graduate student) as well as their role in the project.

Travel Expenses: Specify travel requirements for field work, project meetings, and/or conference attendance for presenting project results. Itemize estimated travel costs to show the number of trips required, destinations, the number of people traveling and per diem rates, cost of transportation, and miscellaneous expenses for each trip. Calculations of other expenses (such as registration fees or vehicle rental costs) should also be shown.

Other Direct Costs: Itemize any proposed permanent equipment acquisitions ($5,000 or more) and show the estimated cost of each item. Explain costs including publication costs, office supplies, training, etc.

Indirect Costs: Provide indirect cost rate and amount approved for each institution.

Timeline

Provide an estimated timeline describing major and minor project phases, milestones, and deadlines as applicable and including any relevant procurement deadlines. Assume that funding will be awarded no later than March 30, 2014 and reference specific months or dates within FY14 or in terms of *time from date of award* e.g. 3 weeks after date of award. CDI projects must be scheduled for completion by September 30, 2014 to allow time for generating final reports and meeting end of fiscal year deadlines.

Proposals may reference future timeline expectations beyond FY14 if they provide additional context and relevance to the project and its impacts.

Appendices
Appendices may include additional materials such as

- letters of support (max. 1 page each)
- curriculum vitae of all personnel involved (max. 2 pages each)
- or any other materials relevant to the explanation of the project

2) Budget Form Example

Applicants are required to use the Budget Form Template (Excel) (*https://my.usgs.gov/confluence/display/cdi/CDI+FY14+RFP+Forms*). Below is a listing of information required in the template. Include the following categories of information, separating the CDI funds from the in-kind match:

- Personnel (Salaries and Benefits)
- Travel Expenses
- Other Direct Cost Line Items (Equipment/Supplies)
- Total Direct Charges
- Indirect Charges (Overhead)

Budget Form Example:

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. SALARIES (including Benefits):		
Personnel :		
John Doe, 150 hrs at $65/hr (PI, Assistant Deputy Director)	$	$9,750
Jane Smith, 125 hrs at $57/hr (GIS Manager, data reviewer)	$7,125	$
Student, 100 hrs at $37/hr (data miner)	$1,850	$1,850
Contract Personnel :		
Bob Thomas, XYZ Inc., 125 hrs at $48/hr (database developer)	$19,000	$
Total Salaries:	$27,975	$11,600
2. TRAVEL EXPENSES:		
Trip 1 (GIS Conference, 2 days, 4 travelers)		
Per Diem:	$	$228
Transportation (Airfare + Mileage/Shuttle):	$	$472
Other expenses (Registration fees):	$	$450
Trip 2 (CDI Workshop, 2 days, 2 travelers)		
Per Diem:	$142	$
Transportation (Airfare + Mileage/Shuttle):	$1,000	$
Other expense (Registration fees):	$386	$
Total Travel Expenses:	$1,528	$1,150
3. OTHER DIRECT COSTS: (itemize)		
Equipment (inc. software, hardware, purchases/rentals):	$	$5,000
Publication Costs:	$5,000	$
Office supplies:	$	$
Training:	$	$
Other expenses (specify):	$	$
Total Other Direct Costs:	$5,000	$5,000
Total Direct Costs:	$34,503	$17,750
Indirect Costs (24%):	$8,281	$0
GRAND TOTAL:	$42,784	$17,750

3) Product Delivery Form

Applicants are required to use the Product Delivery Form Template and submit in a PDF format (*https://my.usgs.gov/confluence/display/cdi/CDI+FY14+RFP+Forms*). As required in the template, include the following categories of information Digital/Electronic Products; Data/Metadata; and Publications.

Appendix C – Example Cover Sheet

CDI SSF Category 1: Management, Policy and Standards

Title: A Semantic Standard and Tool for Integrating Mineral Deposit Data from Rock, Soil, Water, and Plant Analyses.

Principal Investigator(s):
Graham Granule, USGS Oregon Water Science Center, 2130 SW 5th Ave, Portland, OR 97201. Ph (503) 251-3200, Fax (503) 251-3333, Email *ggranule@usgs.gov*
Sandy Lake, Utah State University, Mineral Deposits Laboratory, 0900 Old Main Hill Rm 164, Logan, Utah 84322-0900. Ph (435) 797-1189, Fax (435) 797-1100, Email *slake@usu.edu*

Fiscal Contact:
Sharon Thrift, USGS Oregon Water Science Center, 2130 SW 5th Ave, Portland, OR 97201. Ph (503) 251-3201, Fax (503) 251-3333, Email *sthrift@usgs.gov*

Collaborators:
Elliott Smith, USGS Oregon Water Science Center, 2130 SW 5th Ave, Portland, OR 97201. Ph (503) 251-3202, Fax (503) 251-3333, Email *esmith@usgs.gov*
Sherry Thomas, Oregon State University, Department of Lichens, 555 SW Jefferson Way, Corvallis, OR 97331. Ph (541) 737-1002, Fax (541) 737-1000, Email *sthomas@oregonstate.edu*

Abstract:
[200-250 word block of text here.]

Total funding amount requested: $25,000
Total in-kind funding: $15,000

Datasets:
USGS National Geologic and Soil-Based Copper Survey, 1943-present, contiguous US, ~1.3 million; National Park Service Lichen-Indicated Selenium Deposition, 1993 – 2003, Nevada, 538,000; Environmental Protection Agency HUC Mineral Concentrations, 1987-present, non-contiguous US, 984,000.

Geographic/geologic/ecosystem/habitat/taxonomic/other context:
US national, karst formations, lichens

Type of Product(s) Generated:
Mobile application, GIS Data Layers, USGS Open File Report

Appendix D – Full Proposal Review Process

Proposals will be considered based on the completeness of proposal narrative, meeting of stated basic eligibility (including submission and formatting requirements), completeness and accuracy of budget, in-kind match, and other SSF category requirements. Budgets and timelines will be evaluated for reasonableness and appropriateness to the CDI SSF as well as to project goals outlined in the proposal.

Proposal reviewers will evaluate and score each proposal using the narrative evaluation factors (see *Proposal Narrative Guidance in Appendix B – Format for Invited Full Proposals* and *Scoring* below). Through a peer consensus process, proposals will be ranked according to merit.

The selected proposals will be submitted to the CDI executive sponsor Kevin Gallagher (Associate Directory, USGS Core Science Systems) and Cheryl Morris (Director, USGS Core Science Analytics and Synthesis) for final approval.

Proposal Review Panel

Proposals will be reviewed by a panel consisting of a peer group of professionals that are knowledgeable in data management, information technology, and other relevant disciplines in the context of the CDI. Any and all effort will be made to include broad disciplinary representation and expertise among the reviewers. If necessary, the reviewers may consult with subject experts not otherwise included in the main reviewing team.

Conflicts of Interest

The CDI recognizes that due to its collaborative nature and broad participation across the USGS and its partners, there is potential for overlap and conflicts of interest to occur or be perceived among members of the FY14 CDI Proposal Review Panel and proposal authors. Any and all efforts will be made to prevent the occurrence of such conflicts in all CDI activities including proposal review.

Proposal authors participating in the FY14 CDI Proposal Review Panel may not review their own proposals; and may not review other proposals submitted under the same SSF category as their own proposal. Prospective members of the FY14 CDI Proposal Review Panel will be asked to sign and submit a Conflict of Interest Statement and Certification.

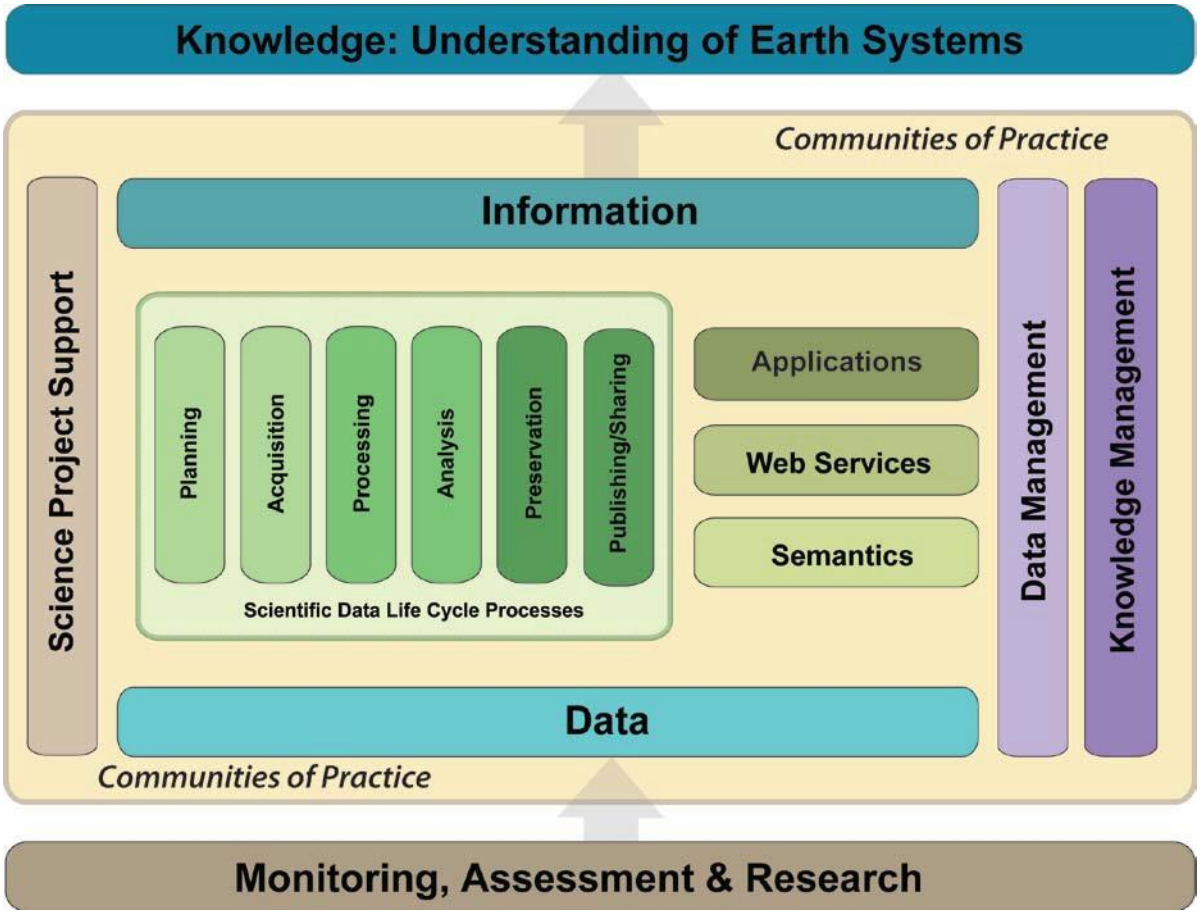
Scoring

The proposal narrative will be evaluated and scored by the FY14 CDI Proposal Review Panel. Following the cover sheet all narratives should be divided into sections with clearly denoted headings for scope, technical approach, expertise, commitment to effort, budget, timeline, and appendices. Each narrative section will be scored 1-10 (1 being the lowest and 10 the highest) by each reviewer and calculated by the section's weighted value to produce a final score. See *Proposal Narrative Guidance in Appendix B – Format for Invited Full Proposals* for specific narrative requirements.

Narrative Section	Weighted Value
Summary	N/A
Scope	25%
Technical Approach	25%
Expertise	25%
Commitment to Effort	15%
Budget	5%
Timeline	5%
Appendices	N/A

Appendix E – CDI Science Support Framework (SSF)

The CDI SSF provides a conceptual architecture that illustrates how the CDI contributes to Bureau-level data integration efforts; and defines how current and future CDI projects fit within the framework.



USGS Data Assets Flow through the CDI Science Support Framework. USGS data assets flow vertically through the SSF from a base of monitoring, assessment, & research through the Scientific Data Life Cycle (SDLM) processes, applications, Web services, and semantics. The assets are transformed into information products that benefit from data and knowledge management and also increase knowledge and understanding of the Earth's physical and biological systems. Data assets flow horizontally through the SSF from and through science projects to data and knowledge management, too.

The horizontal elements in the SSF represent the "what" of the CDI: products and tools, the things that contribute to the advancement of scientific data and that lead to the development of knowledge and understanding of the Earth's systems.

The vertical elements in the SSF represent the "how" of the CDI: the processes, the implementation of standards and best practices, and the interactions among people, data, and technology used to achieve data integration.

Individual Framework element descriptions:

Science Inputs (brown elements)

***Monitoring, Assessment, & Research*:** USGS scientists conduct monitoring, assessment, and research that generates data assets. Through the application of business, computational, and analytical processes and technologies, these assets are

converted into information products that can be shared with other researchers, stakeholders, and citizens to increase our knowledge and understanding of the Earth's physical and biological systems.

***Science Project Support*:** Successful science projects encompass a range of activities represented in the SDLM. At each step in the cycle, researchers and data stewards rely on an array of sophisticated tools and services for data, information and knowledge discovery, acquisition, integration, management, and sharing.

Communities of Practice (tan element)

Communities of practice are the foundation for CDI and all its products – the communities of people working towards the goal of advancing scientific data and information management and data integration across the USGS.

Data & Information Assets (blue elements)

USGS assets include **Data** (e.g., raw data, databases, and linked open data (RDF[1])); **Information** or derived/interpreted information products in the broad sense (e.g., published or shared maps, reports, datasets); and **Knowledge** of all types and in all forms — recorded, organized, and preserved in the form of various artifacts. Knowledge can then be improved; shared across groups, organizations, and domains; and reused to support individual and group learning and research.

Computational Tools & Services (green elements)

Scientific Data Life Cycle processes include tools and services that move data through the SDLM, human and machine interactions, and interactions with data through technology.

Detailed descriptions of SDLM Processes:

- **Planning** – A documented sequence of intended actions to identify and secure resources and gather, maintain, secure, and utilize data assets;
- **Acquisition** – The series of actions for collecting or adding to data assets;
- **Processing** – A series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use;
- **Analysis** – A series of actions and methods performed on data that help describe facts, detect patterns, develop explanations, and test hypotheses;
- **Preservation** – Actions and procedures to keep data for some period of time; to set data aside for future use; and
- **Publishing/Sharing** – To prepare and issue, or to disseminate data or information products.

Semantics convert raw data into data that can be interpreted by machines: Machine Readable Metadata, Semantic Mediation for Data Integration & Discovery, Ontologies/Vocabularies, and World Wide Web Consortium Standards.

Web Services include machine to machine data exchange, SOAP,[2] REST,[3] SPARQL[4] EndPoints, and other protocols and services.

Applications include human readable data services and user interfaces to data driven applications.

Management, Policy, & Standards (purple elements)

Data Management includes data and metadata standards and policies and occurs in all phases of the Data Life Cycle from scientific research to finished information products.

Knowledge Management involves the creation, standardized documentation, and organization of knowledge using tools such as SKOS[5] Vocabularies and information modeling, resulting in the formation of knowledge bases.

[1] Resource Description Framework
[2] Simple Object Access Protocol
[3] REpresentational State Transfer
[4] SPARQL Protocol and RDF Query Language
[5] Simple Knowledge Organization Systems

Appendix F – CDI Coordinators

CDI Executive Sponsors
Kevin Gallagher, Associate Director, USGS Core Science Systems
Cheryl Morris Director, USGS Core Science Analytics and Synthesis Program

CDI Facilitators
Jennifer Carlino (jcarlino@usgs.gov)
Michelle Chang (mchang@usgs.gov)

CDI Citizen Science Working Group
https://my.usgs.gov/confluence/display/cdi/Citizen+Science+Working+Group
Megan Hines – co Lead
David Govoni – co Lead
Barbara Poore

CDI Data Management Working Group
https://my.usgs.gov/confluence/display/cdi/Data+Management+Working+Group
Heather Henkel – co Lead
Vivian Hutchison – co Lead
John Faundeen
Steve Tessler

CDI Semantic Technologies Working Group
https://my.usgs.gov/confluence/display/cdi/Semantic+Web+Working+Group
Janice Gordon – co Lead
Fran Lightsom – co Lead

CDI Tech Stack Working Group
https://my.usgs.gov/confluence/display/cdi/Technology+Stack+Working+Group
Dave Blodgett – co Lead
Rich Signell – co Lead
Roland Viger – co Lead

CDI Mobile Applications Working Group
https://my.usgs.gov/confluence/pages/viewpage.action?pageId=63832428
Tim Kern – co Lead
Lorna Schmid – co Lead

CDI 3D/4D Modeling and Visualization Working Group
https://my.usgs.gov/confluence/pages/viewpage.action?pageId=253362302
Mike Marketti – Lead